



Energy Efficiency and Renewable Energy
Federal Energy Management Program

How to Buy a Water-Saving Showerhead

Why Agencies Should Buy Efficient Products

- Executive Order 13123 and FAR section 23.704 direct agencies to purchase products in the upper 25% of energy efficiency, including all models that qualify for the EPA/DOE ENERGY STAR® product labeling program.
- Agencies that use these guidelines to buy efficient products can realize substantial operating cost savings and help prevent pollution.
- As the world's largest consumer, the federal government can help "pull" the entire U.S. market towards greater energy and water efficiency, while saving taxpayer dollars.

Federal Supply Source:

- General Services Administration (GSA)
Phone: (817) 978-8640

For More Information:

- DOE's Federal Energy Management Program (FEMP) Help Desk and World Wide Web site have up-to-date information on energy-efficient federal procurement, including the latest versions of these recommendations.
Phone: (800) 363-3732
www.eren.doe.gov/femp/procurement
- American Water Works Association's "WaterWiser" is a good resource for water conservation and efficiency information.
Phone: (800) 559-9855
www.waterwiser.org
- California Energy Commission (CEC) has a list of certified plumbing fixtures.
Phone: (916) 654-5106
ftp://energy.ca.gov/pub/efftech/appliance
- Home Energy magazine provides water conservation tips.
Phone: (510) 524-5405
www.homeenergy.org
- Consumer Reports rates plumbing fixtures.
www.consumerreports.org
- Contact your local water utility for details about local water conservation programs and incentives.
- Lawrence Berkeley National Laboratory provided supporting analysis for this recommendation.
Phone: (202) 646-7950

Efficiency Recommendation

Product Type	Recommended Flow Rate ^a	Best Available Flow Rate
Showerhead	2.2 gallons per minute or less	1.5 gallons per minute ^b

a) Based on ASME test procedure A112.18.1M-1994, with an inlet water pressure of 80 pounds per square inch.

b) Some lower-flow models exist, but shower quality is considerably sacrificed.

The federal supply source for water-saving showerheads is the General Services Administration (GSA), which offers them through its "Special Order" program. Request models that meet this Efficiency Recommendation. When buying from a commercial source (retailer or distributor), select or specify models with a flow rate that meets the recommended level.

A common complaint is that some "low-flow" showerheads give an unsatisfactory shower. However, there is a substantial difference in the quality of spray for different showerheads, even among models with the same flow rate. For spray pattern ratings and other features, refer to *Consumer Reports*. Before purchasing a large volume of showerheads, consider sampling a few different models for user satisfaction.

Although showerhead flow rates are reported at an inlet water pressure of 80 psi (in accordance with the Energy Policy Act of 1992), the actual flow rate of the showerhead will depend on the actual inlet water pressure.

Early replacement of a older, high-flow showerheads can lead to even greater water and energy savings than shown in the Cost-Effectiveness table, below. For example, replacing an older (4.0 gpm) unit with a recommended new showerhead (2.2 gpm) will have a 3-5 month payback and save \$500-1000 over a ten year period,

Where to Find Water-Saving Showerheads

Buyer Tips

Early Replacement

assuming average federal utility rates. Some older showerheads become occluded by mineral buildup and dispense significantly less water than their rated flows, however, mitigating savings from replacement units.

Showerhead Cost-Effectiveness Example			
<i>Performance</i>	<i>Base Model^a</i>	<i>Recommended Level</i>	<i>Best Available</i>
Water Use Only			
Gallons per minute (gpm)	2.5 gpm	2.2 gpm	1.5 gpm
Annual Water Use	18,250 gallons	16,060 gallons	10,950 gallons
Annual Water Cost	\$73	\$64	\$44
Lifetime Water Cost	\$610	\$540	\$370
With Electric Water Heating			
Annual Energy Use	2,370 kWh	2,120 kWh	1,540 kWh
Annual Energy Cost	\$142	\$127	\$92
Lifetime Energy Cost	\$1,090	\$980	\$710
Lifetime Energy and Water Cost Savings	–	\$180	\$620
With Gas Water Heating			
Annual Energy Use	131 therms	120 therms	94 therms
Annual Energy Cost	\$53	\$48	\$38
Lifetime Energy Cost	\$450	\$410	\$320
Lifetime Energy and Water Cost Savings	–	\$110	\$370

a)The flow rate of the Base Model just meets the current federal standards for showerheads.

Cost-Effectiveness Assumptions

Showerhead use is assumed to be 10 minutes per shower, 2 showers per day, 365 days per year. The showerhead water temperature is assumed to be 106°F and the inlet water pressure 80 psi. The assumed electricity and gas prices are 6¢/kWh and 40¢/therm, the federal average energy prices in the U.S. The assumed combined water and waste-water price is \$4/1,000 gallons.

Using the Cost-Effectiveness Table

In the example shown above, a new showerhead with a Recommended flow rate of 2.2 gpm will generate \$180 in water and energy cost savings when water heating is electric, or \$110 in savings if water is heated with gas. Similarly, a Best Available showerhead, with a flow rate of 1.5 gpm, will save \$620 (with electric water heating) or \$370 (with gas water heating). Since first-cost premiums are either small or non-existent for these showerheads, their purchase is virtually certain to be cost-effective.

What if my Water or Energy Price is different?

Recalculate your Lifetime Energy or Water Cost by using your own water and energy prices, and make the corresponding adjustments in the Lifetime Energy and Water Cost Savings. For example, to adjust for a different electricity price, multiply the Lifetime Energy Cost by this ratio: $\left(\frac{\text{Your price in } \$/\text{kWh}}{6.0 \text{ } \$/\text{kWh}} \right)$. Similar adjustments can be made for different gas and water prices.

Definition

Lifetime Energy or Water Cost is the sum of the discounted value of annual energy or water costs, based on average usage and an assumed showerhead life of 10 years. Future energy price trends and a discount rate of 3.4% are based on federal guidelines (effective from April, 2000 to March, 2001). Future water and waste water treatment costs are conservatively assumed to increase only at the rate of inflation.

Metric Conversions

1 gallon = 3.8 liters
 1 therm = 100,000 Btu
 = 29.3 kWh
 = 105.5 MJ
 1 psi = 6.9 kPa
 °F = (1.8 * °C) + 32

